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| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.           | CONFIRMATION NO.   |
|---|-------------|----------------------|-------------------------------|--------------------|
| 09/878,916  | 06/13/2001  | Sung-hee Lee         | Q63031                        | 2274               |
| 7590 07/01/2004<br>SUGHRUE, MION, ZINN,<br>MACPEAK & SEAS, PLLC<br>2100 PENNSYLVANIA AVE., N.W.<br>WASHINGTON, DC 20037 |             |                      | EXAMINER<br>DESIR, JEAN WICEL |                    |
|   |             |                      | ART UNIT<br>2614              | PAPER NUMBER<br>11 |

DATE MAILED: 07/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/878,916

Applicant(s)

LEE ET AL.

Examiner

Jean W. Désir

Art Unit

2614

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 October 2001, Pre-Amendment.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9, 19 and 20 is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-7, 10, 11 and 13-18 is/are rejected.
- 7) ☒ Claim(s) 4, 8 and 12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 June 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 10.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to because Figures 1-8 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 5-7, 10, 11, 13-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Kovacevic et al (US 5,661,525).

#### **Claim 1:**

Kovacevicet discloses:

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“(a) estimating a plurality of bi-directional motion vectors using motion vectors determined from a current frame and a previous frame”, see col. 10 lines 38-48, col. 7 lines 46-51;

“(b) determining an estimated bi-directional motion vector from step (a), corresponding to a neighboring block, that has the minimum error distortion from among the plurality of motion vectors estimated in step (a)”, see col. 10 line 49 to col. 11 line 15, col. 3 lines 55-60;

“(c) setting a motion vector of a current block to be the estimated bi-directional motion vector determined in step (b)”, see col. 9 line 45 to col. 10 line 9; and

“(d) forming a frame to be interpolated with the motion vector set in step (c)”, see col. 10 lines 10-34.

Claim 2 is disclosed, see col. 5 lines 4-21.

Claims 5, 6 are met, see col. 9 lines 45-55, col. 3 lines 55-62.

Claim 7 is met by Fig. 5 item 18, col. 9 line 45 to col. 10 line 9.

**Claim 10:**

Kovacevicet discloses a de-interlacing method (Fig. 5, ABSTRACT lines 1-2) comprising:

“(a) estimating bi-directional motion vectors using motion vectors determined from a previous field and a next field”, see col. 10 lines 38-48, col. 7 lines 46-51;

“(b) setting a motion vector of a pixel to be interpolated to be the motion vector estimated in step (a) that has a minimum neighboring error distortion” see col. 10 line 49 to col. 11 line 15, col. 3 lines 55-60;

"and (c) forming the pixel to be interpolated with the motion vector set in the step (b)", see col. 10 lines 10-34.

Claim 11 is disclosed, see col. 5 lines 4-21.

Claims 13, 14 are met, see col. 9 lines 45-55, col. 3 lines 55-62.

Claim 15 is met by Fig. 5 item 18, col. 9 line 45 to col. 10 line 9.

Claims 16, 17 are disclosed, see col. 4 lines 24-53, col. 5 lines 4-31.

**Claim 18:**

Kovacevicet discloses:

"a bi-directional motion estimating unit operable to obtain a motion vector between a current field and a previous field, assign the motion vector to a field to be interpolated, and estimate the assigned motion vector for a field to be interpolated", see col. 10 lines 20-48;

"a spatiotemporal smoothing unit operable to evaluate the accuracy of the motion vector of a current block in the field to be interpolated in the bi-directional motion estimating unit, and set the motion vector of a neighboring block, which has the minimum error distortion, as the motion vector of the current block", see col. 7 lines 15-55, col. 3 lines 53-62;

"and a signal converting unit operable to form a pixel of a line without data, with the median value of pixel values obtained by applying the motion vector set in the spatiotemporal smoothing unit, the mean value of the pixel values, and the values of pixels vertically neighboring the pixel to be interpolated", see col. 4 lines 24-53, col. 5 lines 4-31.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 3 rejected under 35 U.S.C. 103(a) as being unpatentable over Kovacevicet et al (US 5,661,525).

The claimed limitation "decimating an image; and estimating a motion vector from the decimated image" is not explicitly disclosed by Kovacevicet. However, the reference would have rendered the claimed invention obvious to an artisan, because decimation is a very well known technique, in the art, of removing samples to reduce the amount of processing or reduce the number of samples to store or transmit; thus, an artisan would be motivated to include this technique in Kovacevicet's disclosure at the time the invention was made to arrive at the claimed invention.

***Allowable Subject Matter***

6. Claims 4, 8, 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. Claims 9, 19, 20 are allowed.

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean W. Désir whose telephone number is (703) 308 9571. The examiner can normally be reached on 5/4/9 - First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John W. Miller can be reached on (703) 305 4795. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**JWD**  
**Jun. 22, 04**

  
**MICHAEL H. LEE**  
**PRIMARY EXAMINER**